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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/024,687

12/14/2001

Joseph Robert Cleveland

SAMS01-00169

2991

7590

06/28/2007

Docket Clerk
P.O. Drawer 800889
Dallas, TX 75380

EXAMINER

AHMED, SALMAN

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

06/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/024,687

Applicant(s)

CLEVELAND ET AL.

Examiner

Salman Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 5/25/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-42, 46-54 and 58-68 is/are rejected.
- 7) ☒ Claim(s) 43- 45 and 55-57 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/7/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims 37-68 are pending.

Claims 37-42, 46-54 and 58-68 are rejected.

Claims 43- 45 and 55-57 are objected to.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 37-41 and 49-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Felix et al. (US Pat 5,966,384), in view of Das et al. (US PAT PUB

20020152342, hereinafter Das) and Coverdale et al. (US PAT 6373842, hereinafter Coverdale).

Regarding claims 37 and 49, Felix et al. teach for use in a wireless network communications system, a method and an apparatus for increasing a data transmission rate in a mobile wireless communication channel during hand off (See Fig. 6, Felix et al.), method and apparatus comprising the steps of: sending data packets from a base station to a mobile station on a first channel at a first data rate; (Felix et al. teach sending the data from base station at a first data rate on the first bandwidth as the supplemental channel. See col 4, lines 1-30.) receiving a negative acknowledgment signal from said mobile station that said mobile station failed to correctly receive at least one data packet; (See col 4, lines 42-54.) sending at least one replacement data packet to mobile station on second channel at a second data rate (While the interruption or timeout occurs, retransmission would utilize the fundamental channel, which would be considered as second channel at a second data rate. See col 4, lines 1-50).

Felix et al. does not specifically teach retransmitting data on the second data rate which is higher than the first data rate.

Das in the same field of endeavor teaches transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted (page 5 lines 1-14).

it would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Felix's system/method by incorporating the steps of retransmitting data on the second data rate which is higher than the first data rate as suggested by Das. The motivation is that (as suggested by Das, page 1, section 0007) if the channel conditions improve between the time of the initial transmission and the re-transmission, the re-transmission will likely be inefficiently utilized if same or lower data rate is being used. As such in such scenario a higher data rate can be used for the efficient re-transmission.

Felix and Das do not explicitly teach a replacement data packet controller capable of receive at least one replacement data packet to replace an error or missing packet.

Coverdale in the same field of endeavor teaches that once the retransmitted frame 125 is received as frame 145, the system (the controller 290) checks no errors are received in the retransmitted frame 145. If so, and if there is time in the buffer delay prior to the speech frames being delivered, the received frame 145 is placed into location 202 replacing the errored frame 142 (column 6 lines 1-10).

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Felix and Das' system/method by incorporating the steps of a replacement data packet controller capable of receive at least one replacement data packet to replace an error or missing packet as suggested by Coverdale. The motivation is that (as suggested by Coverdale, columns 1-2 lines 65-7) the conventional method of providing unidirectional streaming services is susceptible to drop-outs and

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short interruptions of the radio channel caused by interference, multipath fading and blocking type wireless transmission impairments. While extrapolation of corrupted data often improves quality compared to simply converting the corrupted data into speech, the speech quality is still degraded. Therefore, there is a need for improving the reception quality of unidirectional streaming services data in wireless systems by using Coverland's step of receiving at least one replacement data packet to replace an error or missing packet. Such method will enable a network to provide higher quality and reliable data communication among network elements.

In regards to claim 38 and 50 Felix et al. does not specifically teach base station is capable of receiving an acknowledgment signal from mobile station that mobile station has received at least one replacement data packet from said base station, and wherein in response to receiving acknowledgment signal base station is further capable of: ceasing sending at least one replacement data packet on second channel at second higher data rate, which is higher than first data rate; and sending data packets to said mobile station on first channel at first data rate

In regards to claim 38 and 50, Das teaches base station is capable of receiving an acknowledgment signal from mobile station that mobile station has received at least one replacement data packet from said base station, and wherein in response to receiving acknowledgment signal base station is further capable of: ceasing sending at least one replacement data packet on second channel at second higher data rate, which is higher than first data rate; and sending data packets to said mobile station on first channel at first data rate (page 1 sections 0005-0007 and page 5 lines 1-14, data

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transmission from the base station to a particular receiver occurs when that receiver reports the highest calculated data rate to the base station. The following protocol is utilized in data transmissions. The base station transmits data to the receiver in time slot n at the calculated data rate. The receiver receives the data transmission and responds with an ACK/NACK message indicating to the base station whether the data transmission was successfully received, i.e., no errors, by the receiver. Specifically, if the data transmission is successfully received, the receiver responds with an acknowledgement or ACK. Otherwise the receiver responds with a negative acknowledgement or NACK. The ACK/NACK message is received by base station in time slot $n+j$, wherein j is some known time offset. Thus, the base station can determine that an ACK/NACK message was transmitted from a receiver to which data was transmitted j time slots prior to receipt of the ACK/NACK message. If an ACK was received, the base station knows that the data transmission to the associated receiver was successful. If a NACK was received, the base station knows that the data transmission to the associated receiver was unsuccessful. In response to the NACK, the base station re-transmits, at the same data rate, the same data which was earlier transmitted. The base station further transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted). Claim 38 utilizes the language, "capable of" for describing base station

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functionality. It is not clear as to the steps of limitations are actually being implemented by the base station or the base station is merely "capable of" implementing the steps but not implementing them. Although, Das teaches all the limitations of claim 38, the phrase, "capable of" does not require all of the details that follow it, in other words, the base stations of Das do not require to explicitly show/do all the steps of limitations of the claims, as long as they are capable of doing the steps. The base station in Das' teaching has all the necessary components of a base station as it is known by one of ordinary skill in the art. That is, the base station in Das has encoders, transmitters, receivers, antenna, processors, memory etc. As such Das' base station is "capable of" doing all the steps of the any limitations of present application if it is programmed and configured to do so. Applicants current claim is "capable of" stated limitations. It is not clear, whether, that capability is actually being implemented to perform the stated steps or merely saying that if programmed it will be "capable of" doing so.

it would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Felix's system/method by incorporating the steps of base station is capable of receiving an acknowledgment signal from mobile station that mobile station has received at least one replacement data packet from base station, and wherein in response to receiving acknowledgment signal base station is further capable of: ceasing sending at least one replacement data packet on second channel at second higher data rate, which is higher than first data rate; and sending data packets to mobile station on first channel at first data rate as suggested by Das. The motivation is that for efficient and reliable transmission, based on the channel

conditions. a system can choose any arbitrary data rate to transmit data i.e. a system either can send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload; thus, efficiently and reliably allowing for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth.

Regarding claims 39 and 51, Felix teaches channel could fundamental channel or supplemental channel (See Fig. 1, Felix).

In regards to claims 40, 41, 52 and 53, Felix, Das and Coverdale do not explicitly teach first data rate on first channel is fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel is greater than fourteen and one tenths kilobits/seventy two per second.

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Felix, Das and Coverdale's system/method by incorporating the steps of implementing first data rate on first channel being fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel being greater than fourteen and one tenths kilobits/seventy two per second. The motivation is that based on the channel conditions a system can choose any arbitrary data rate to transmit data. A system either can send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the

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transmission rate if the overall traffic load is short of bandwidth. Fourteen and one tenths kilobits/seventy two per second are arbitrary data rates that a system can choose for efficient transmission.

4. Claims 42, 47, 48, 54, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (US PAT PUB 20020152342, hereinafter Das) in view of Kubota (US PAT PUB 2001/0007819) and Chang (US PAT PUB 2001/0030953).

In regards to claims 42 and 54, Das teaches a base station (being capable of) receiving a negative acknowledgment signal from mobile station that mobile station failed to correctly receive at least one data packet (page 1 sections 0005-0007, data transmission from the base station to a particular receiver occurs when that receiver reports the highest calculated data rate to the base station. The following protocol is utilized in data transmissions. The base station transmits data to the receiver in time slot n at the calculated data rate. The receiver receives the data transmission and responds with an ACK/NACK message indicating to the base station whether the data transmission was successfully received, i.e., no errors, by the receiver. Specifically, if the data transmission is successfully received, the receiver responds with an acknowledgement or ACK. Otherwise the receiver responds with a negative acknowledgement or NACK); wherein base station (being capable of) sending at least one replacement data packet to mobile station on second channel at a second data rate, which is higher than first data rate; and wherein at least one replacement data packet replaces one of: a missing data packet and an error data packet (page 5 lines

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1-14, The base station further transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted).

Das not explicitly teach a hand-off scenario i.e. during hand-off first source base station communicates to the mobile station via target base station and receives communication from the mobile station via target base station.

Kubota in the same field of endeavor teaches for use in a wireless network communications system, an apparatus during handing off, apparatus comprising: a first base station (figure 1 element 11 sub. 1) (capable of) sending data packets to a second base station (figure 1 element 11 sub. 2) on a first channel at a first data rate (page 1 section 0010, the downstream user information from mobile switching center 13 is transmitted via inter-base-station line 16 from first base station 11.sub.1 to second base station 11.sub.2); wherein second base station (is capable of) sending data packets to a mobile station on a second channel (page 1 section 0010, the downstream user information from mobile switching center 13 is transmitted via inter-base-station line 16 from first base station 11.sub.1 to second base station 11.sub.2, from which the downstream user information is also transmitted through a radio link to mobile station 17).

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Das' system/method by incorporating the steps of hand-

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off, i.e. source base station sending and receiving user information from the mobile station via target base station as suggested by Kubota. The motivation is that, hand-off is an integral part of wireless communication and implementing features in an hand-off scenario is imperative to make a network reliable and user friendly. Although, Das and Kubota teach all the limitations of claim 42, the phrase, "capable of" does not require all of the details that follow it, in other words, the base stations of Das and Kubota do not require to explicitly show/do all the steps of limitations of the claims, as long as they are capable of doing the steps. The base stations in Das and Kubota's teaching have all the necessary components of a base station as it is known by one of ordinary skill in the art. That is, the base stations in Das and Kubota have encoders, transmitters, receivers, antenna, processors, memory etc. As such Das and Kubota's base stations are "capable of" doing all the steps of the any limitations of present claim if it is programmed and configured to do so. Applicants current claim is "capable of" stated limitations. It is not clear, whether, that capability is actually being implemented to perform the stated steps or merely saying that if programmed it will be "capable of" doing so.

Furthermore, in regards to claim 42 and 54 Das and Kubota do not explicitly teach using A3 physical transition directive messages between base stations.

Chang in the same field of endeavor teaches an A3 interface is for a soft/softer handoff between the base stations, and is used for an exchange of signaling data and user traffic between frame selection functions of the target base station 40 and the source base station 30 (section 0008).

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Das and Kubota's system/method by incorporating the steps of using A3 messages between base stations as suggested by Chang. The motivation is that, an A3 interface is for a soft/softer handoff between the base stations, and is used for an efficient and reliable exchange of signaling data and user traffic between frame selection functions of the target base station and the source base station (as suggested by Chang, section 0008) Although, Das and Kubota in view of Chang teach all the limitations of claim 42, the phrase, "capable of" does not require all of the details that follow it, in other words, the base stations of Das and Kubota in view of Chang do not require to explicitly show/do all the steps of limitations of the claims, as long as they are capable of doing the steps. The base stations in Das and Kubota in view of Chang's teaching have all the necessary components of a base station as it is known by one of ordinary skill in the art. That is, the base stations in Das and Kubota in view of Chang have encoders, transmitters, receivers, antenna, processors, memory etc. As such Das and Kubota in view of Chang's base stations are "capable of" doing all the steps of the any limitations of present claim if it is programmed and configured to do so. Applicants current claim is capable of stated limitations. It is not clear, whether, that capability is actually being implemented to perform the stated steps or merely saying that if programmed it will be capable of doing so.

In regards to claims 47, 48, 59 and 60 Das and Kubota in view of Chang do not explicitly teach first data rate on first channel is fourteen and one tenths kilobits/seventy

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two per second and wherein second data rate on second channel is greater than fourteen and one tenths kilobits/seventy two per second.

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Das and Kubota in view of Chang's system/method by incorporating the steps of implementing first data rate on first channel being fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel being greater than fourteen and one tenths kilobits/seventy two per second. The motivation is that for efficient and reliable transmission, based on the channel conditions, a system can choose any arbitrary data rate to transmit data i.e. a system either can send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload; thus, efficiently and reliably allowing for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth. Furthermore, fourteen and one tenths kilobits/seventy two per second are arbitrary data rates that a system can choose for efficient transmission.

5. Claims 46 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das, Kubota and Chang as applied to claims 42 and 54 above, and further in view of Coverdale.

Regarding claims 46 and 58, Das, Kubota and Chang teach a retransmission method as described in the rejections of claims 42 and 54 above.

Das, Kubota and Chang do not explicitly teach first channel and second channel are one of: a fundamental channel, a first supplemental channel, a second supplemental channel, the same supplemental channel and the first supplemental channel with an increased bandwidth.

Coverdale in the same field of endeavor teaches first channel and second channel are one of: a fundamental channel, a first supplemental channel, a second supplemental channel, the same supplemental channel and the first supplemental channel (column 10 lines 11-20, Such a control channel will preferably operate in real-time or near real-time to minimize delays. The control channel should be defined as logically distinct from the streaming information (and should by-pass the transmit and receiver buffers). The control and streaming channels can be multiplexed on a single physical channel or use two distinct channels (e.g., fundamental and supplemental channel in cdma2000) with an increased bandwidth (column 9 lines 46-52, the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth.

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Das, Kubota and Chang's system/method by incorporating the steps of first channel and second channel are one of: a fundamental channel, a first supplemental channel, a second supplemental

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channel, the same supplemental channel and the first supplemental channel with an increased bandwidth as suggested by Coverdale. The motivation is that (as suggested by Coverdale, column 10 lines 11-20 and column 9 lines 46-52) control channel operates in real-time or near real-time and defined as logically distinct from the streaming information and by-pass the transmit and receiver buffers; thus minimizing delay and making the transmission of control information efficient. Further, increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth and making use of additional channels at variable rate makes the system reliable and efficient.

6. Claims 61-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coverdale in view of Das.

In regards to claim 61, Coverdale teaches for use in a wireless network communications system, an apparatus for use in a mobile, apparatus comprising: a main controller (the controller 290); a replacement data packet acquisition application executable by main controller, replacement data packet acquisition application capable of acquiring at least one replacement data packet from a base station; and a replacement data packet integration application executable by main controller, replacement data packet integration application capable of integrating at least one replacement data packet from base station into a data packet stream to replace one of: a missing data packet and an error data packet (column 7 lines 1-12, The controller 290 generates a retransmission request whenever it receives a notification from the FEC

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decoder 270 that a frame was received in error. This request is then transmitted via the radio frequency block 260 and the antenna 250 to the wireless network. The controller 290 waits for the retransmitted frame to be received and demodulated and error decoded. If the requested frame is received without error in time to replace the errored frame in the playback buffer 200, then the controller 290 replaces the errored frame with the received retransmitted frame, prior to delivery to the speech decoder 280. Otherwise, the controller preferably replaces the errored frame by interpolating the previous and succeeding frames prior to delivery to the speech decoder 280); wherein apparatus is capable of: receiving data packets from a base station on a first channel at a first data rate (column 5 lines 42-49, Speech frames are then transmitted to the wireless terminal. The speech frames received by the wireless terminal 140 are shown to include frames 141, 142, 143, 144, 145 and 146); sending a negative acknowledgment signal to base station that mobile station failed to correctly receive at least one data packet (column 6 lines 58-67, The terminal also includes a frame repeat request controller 290 which would typically include a microprocessor and associated memory for storing software instructions for controlling the terminal and for carrying out the method steps as disclosed herein. The controller 290 is notified of any detected errors by the FEC decoder 270. The controller 290 also controls the delivery of the speech frames stored in the playback buffer 200 and also replaces frames in the playback buffer which were received in error. The controller 290 generates a retransmission request whenever it receives a notification from the FEC decoder 270 that a frame was received in error. This request is then transmitted via the radio

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frequency block 260 and the antenna 250 to the wireless network); receiving at least one replacement data packet from base station on a second channel (column 7 lines 1-12 and column 10 lines 20-30, The controller 290 waits for the retransmitted frame to be received and demodulated and error decoded. If the requested frame is received without error in time to replace the errored frame in the playback buffer 200, then the controller 290 replaces the errored frame with the received retransmitted frame, prior to delivery to the speech decoder 280. Retransmitted frames can optionally be transmitted as packets on a secondary channel, for example, the control channel, to quickly replace the errored frame without varying the normal transmission rate. In this case the transmitter will respond to retransmission requests by transmitting requested frames on the secondary channel and the receiver would monitor the secondary channel for the retransmitted frames). Coverdale further teaches (column 9 lines 46-52), the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth.

Coverdale does not specifically teach retransmitting data on the second data rate which is higher than the first data rate and after sending the acknowledgment signal apparatus is further capable of ceasing to send at least one replacement data packet on second channel.

Das in the same field of endeavor teaches transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted (page 5 lines 1-14). Das teaches (page 1 sections 0005-0007 and page 5 lines 1-14) data transmission from the base station to a particular receiver occurs when that receiver reports the highest calculated data rate to the base station. The following protocol is utilized in data transmissions. The base station transmits data to the receiver in time slot n at the calculated data rate. The receiver receives the data transmission and responds with an ACK/NACK message indicating to the base station whether the data transmission was successfully received, i.e., no errors, by the receiver. Specifically, if the data transmission is successfully received, the receiver responds with an acknowledgement or ACK. Otherwise the receiver responds with a negative acknowledgement or NACK. The ACK/NACK message is received by base station in time slot $n+j$, wherein j is some known time offset. Thus, the base station can determine that an ACK/NACK message was transmitted from a receiver to which data was transmitted j time slots prior to receipt of the ACK/NACK message. If an ACK was received, the base station knows that the data transmission to the associated receiver was successful. If a NACK was received, the base station knows that the data transmission to the associated receiver was unsuccessful. In response to the NACK, the base station re-transmits, at the same data

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rate, the same data which was earlier transmitted. The base station further transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted.

it would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Coverdale's system/method by incorporating the steps of retransmitting data on the second data rate which is higher than the first data rate and stop transmission after successful ACK as suggested by Das. The motivation is that (as suggested by Das, page 1, section 0007) if the channel conditions improve between the time of the initial transmission and the re-transmission, a higher data rate can be used for the efficient and reliable re-transmission during re-transmission period. Further motivation is that (as suggested by Coverdale, column 9 lines 46-52), increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth and making use of additional channels at variable rate makes the system reliable and efficient. Although, Coverdale and Das teach all the limitations of claim 61, the phrase, "capable of" does not require all of the details that follow it, in other words, the base stations of Coverdale and Das do not require to explicitly show/do all the steps of limitations of the claims, as long as they are capable of doing the steps. The base stations in Coverdale and Das' teaching have all the necessary components of a base station as it is known by one of

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ordinary skill in the art. That is, the base stations in Coverdale and Das have encoders, transmitters, receivers, antenna, processors, memory etc. As such Coverdale and Das's base stations are "capable of" doing all the steps of the any limitations of present claim if it is programmed and configured to do so. Applicants current claim is "capable of" stated limitations. It is not clear, whether, that capability is actually being implemented to perform the stated steps or merely saying that if programmed it will be "capable of" doing so.

In regards to claims 63 and 64 Coverdale and Das do not explicitly teach first data rate on first channel is fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel is greater than fourteen and one tenths kilobits/seventy two per second.

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Coverdale and Das's system/method by incorporating the steps of implementing first data rate on first channel being fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel being greater than fourteen and one tenths kilobits/seventy two per second. The motivation is that based on the channel conditions a system can choose any arbitrary data rate to transmit data i.e. a system either can send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload and this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth; thus making the transmission efficient and reliable.

Furthermore, fourteen and one tenths kilobits/seventy two per second are arbitrary data rates that a system can choose for efficient transmission.

In regards to claim 62, Coverdale teaches first channel and second channel are one of: a fundamental channel, a first supplemental channel, a second supplemental channel, the same supplemental channel and the first supplemental channel (column 10 lines 11-20, Such a control channel will preferably operate in real-time or near real-time to minimize delays. The control channel should be defined as logically distinct from the streaming information (and should by-pass the transmit and receiver buffers). The control and streaming channels can be multiplexed on a single physical channel or use two distinct channels (e.g., fundamental and supplemental channel in cdma2000) with an increased bandwidth (column 9 lines 46-52, the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth).

7. Claims 65- 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coverdale in view of Das and Kubota.

In regards to claim 65, Coverdale teaches for use in a wireless network communications system, an apparatus for use in a mobile, apparatus comprising: a main controller (the controller 290); a replacement data packet acquisition application

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executable by main controller, replacement data packet acquisition application capable of acquiring at least one replacement data packet from a base station; and a replacement data packet integration application executable by main controller, replacement data packet integration application capable of integrating at least one replacement data packet from base station into a data packet stream to replace one of: a missing data packet and an error data packet (column 7 lines 1-12, The controller 290 generates a retransmission request whenever it receives a notification from the FEC decoder 270 that a frame was received in error. This request is then transmitted via the radio frequency block 260 and the antenna 250 to the wireless network. The controller 290 waits for the retransmitted frame to be received and demodulated and error decoded. If the requested frame is received without error in time to replace the errored frame in the playback buffer 200, then the controller 290 replaces the errored frame with the received retransmitted frame, prior to delivery to the speech decoder 280. Otherwise, the controller preferably replaces the errored frame by interpolating the previous and succeeding frames prior to delivery to the speech decoder 280); wherein apparatus is capable of: receiving data packets from a base station on a first channel at a first data rate (column 5 lines 42-49, Speech frames are then transmitted to the wireless terminal. The speech frames received by the wireless terminal 140 are shown to include frames 141, 142, 143, 144, 145 and 146); sending a negative acknowledgment signal to base station that mobile station failed to correctly receive at least one data packet (column 6 lines 58-67, The terminal also includes a frame repeat request controller 290 which would typically include a microprocessor and

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associated memory for storing software instructions for controlling the terminal and for carrying out the method steps as disclosed herein. The controller 290 is notified of any detected errors by the FEC decoder 270. The controller 290 also controls the delivery of the speech frames stored in the playback buffer 200 and also replaces frames in the playback buffer which were received in error. The controller 290 generates a retransmission request whenever it receives a notification from the FEC decoder 270 that a frame was received in error. This request is then transmitted via the radio frequency block 260 and the antenna 250 to the wireless network); receiving at least one replacement data packet from base station on a second channel (column 7 lines 1-12 and column 10 lines 20-30, The controller 290 waits for the retransmitted frame to be received and demodulated and error decoded. If the requested frame is received without error in time to replace the errored frame in the playback buffer 200, then the controller 290 replaces the errored frame with the received retransmitted frame, prior to delivery to the speech decoder 280. Retransmitted frames can optionally be transmitted as packets on a secondary channel, for example, the control channel, to quickly replace the errored frame without varying the normal transmission rate. In this case the transmitter will respond to retransmission requests by transmitting requested frames on the secondary channel and the receiver would monitor the secondary channel for the retransmitted frames). Converte further teaches (column 9 lines 46-52), the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load

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allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth).

Coverdale does not specifically teach retransmitting data on the second data rate which is higher than the first data rate and after sending the acknowledgment signal apparatus is further capable of ceasing to send at least one replacement data packet on second channel.

Das in the same field of endeavor teaches transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted (page 5 lines 1-14). Das teaches (page 1 sections 0005-0007 and page 5 lines 1-14) data transmission from the base station to a particular receiver occurs when that receiver reports the highest calculated data rate to the base station. The following protocol is utilized in data transmissions. The base station transmits data to the receiver in time slot n at the calculated data rate. The receiver receives the data transmission and responds with an ACK/NACK message indicating to the base station whether the data transmission was successfully received, i.e., no errors, by the receiver. Specifically, if the data transmission is successfully received, the receiver responds with an acknowledgement or ACK. Otherwise the receiver responds with a negative acknowledgement or NACK. The ACK/NACK message is received by base station in time slot $n+j$, wherein j is some known time

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offset. Thus, the base station can determine that an ACK/NACK message was transmitted from a receiver to which data was transmitted j time slots prior to receipt of the ACK/NACK message. If an ACK was received, the base station knows that the data transmission to the associated receiver was successful. If a NACK was received, the base station knows that the data transmission to the associated receiver was unsuccessful. In response to the NACK, the base station re-transmits, at the same data rate, the same data which was earlier transmitted. The base station further transmitting data to a receiver at a first rate; receiving from the receiver channel condition information and information indicating a non-successful receive of the data; determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted.

it would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Coverdale's system/method by incorporating the steps of retransmitting data on the second data rate which is higher than the first data rate and stop transmission after successful ACK as suggested by Das. The motivation is that (as suggested by Das, page 1, section 0007) if the channel conditions improve between the time of the initial transmission and the re-transmission, in such scenario a higher data rate can be used for the efficient re-transmission during re-transmission period. Further motivation is that (as suggested by Coverdale, column 9 lines 46-52), the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding

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overload and this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth; thus making the transmission efficient and reliable.

Coverdale and Das not explicitly teach a hand-off scenario i.e. during hand-off first source base station communicates to the mobile station via target base station and receives communication from the mobile station via target base station.

Kubota in the same field of endeavor teaches for use in a wireless network communications system, an apparatus during handing off, apparatus comprising: a first base station (figure 1 element 11 sub. 1) (capable of) sending data packets to a second base station (figure 1 element 11 sub. 2) on a first channel at a first data rate (page 1 section 0010, the downstream user information from mobile switching center 13 is transmitted via inter-base-station line 16 from first base station 11.sub.1 to second base station 11.sub.2); wherein second base station (is capable of) sending data packets to a mobile station on a second channel (page 1 section 0010, the downstream user information from mobile switching center 13 is transmitted via inter-base-station line 16 from first base station 11.sub.1 to second base station 11.sub.2, from which the downstream user information is also transmitted through a radio link to mobile station 17).

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Coverdale and Das' system/method by incorporating the steps of hand-off, i.e. source base station sending and receiving user information from the mobile station via target base station as suggested by Kubota. The motivation is

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that, hand-off is an integral part of wireless communication and implementing features in an hand-off scenario is imperative to make a network reliable and user friendly. Although, Coverdale, Das and Kubota teach all the limitations of claim 65, the phrase, "capable of" does not require all of the details that follow it, in other words, the base stations of Coverdale, Das and Kubota do not require to explicitly show/do all the steps of limitations of the claims, as long as they are capable of doing the steps. The base stations in Coverdale, Das and Kubota's teaching have all the necessary components of a base station as it is known by one of ordinary skill in the art. That is, the base stations in Coverdale, Das and Kubota have encoders, transmitters, receivers, antenna, processors, memory etc. As such Coverdale, Das and Kubota's base stations are "capable of" doing all the steps of the any limitations of present claim if it is programmed and configured to do so. Applicants current claim is "capable of" stated limitations. It is not clear, whether, that capability is actually being implemented to perform the stated steps or merely saying that if programmed it will be "capable of" doing so.

In regards to claims 67 and 68 Coverdale, Das and Kubota do not explicitly teach first data rate on first channel is fourteen and one tenths kilobits/seventy two per second and wherein second data rate on second channel is greater than fourteen and one tenths kilobits/seventy two per second.

It would have been obvious to one who has ordinary skill in the art at the time the invention was made to modify Coverdale, Das and Kubota's system/method by incorporating the steps of implementing first data rate on first channel being fourteen and one tenths kilobits/seventy two per second and wherein second data rate on

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second channel being greater than fourteen and one tenths kilobits/seventy two per second. The motivation is that based on the channel conditions a system can choose any arbitrary data rate to transmit data i.e., a system either can send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload and this allows for increasing the transmission rate if the overall traffic load allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth; thus making the transmission reliable and efficient. Furthermore, fourteen and one tenths kilobits/seventy two per second are arbitrary data rates that a system can choose for efficient transmission.

In regards to claim 66, Coverdale teaches first channel and second channel are one of: a fundamental channel, a first supplemental channel, a second supplemental channel, the same supplemental channel and the first supplemental channel (column 10 lines 11-20, Such a control channel will preferably operate in real-time or near real-time to minimize delays. The control channel should be defined as logically distinct from the streaming information (and should by-pass the transmit and receiver buffers). The control and streaming channels can be multiplexed on a single physical channel or use two distinct channels (e.g., fundamental and supplemental channel in cdma2000) with an increased bandwidth (column 9 lines 46-52, the streaming manager can either send data at a rate either faster or slower, or even pause momentarily, depending on the traffic on the wireless channel as a means of avoiding overload. Thus, this allows for increasing the transmission rate if the overall traffic load

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allows extra bandwidth and decreasing the transmission rate if the overall traffic load is short of bandwidth).

Allowable Subject Matter

8. Claims 43- 45 and 55-57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments see pages 16-19 of the Remarks section, filed 5/25/2007, with respect to the 35 USC 112 rejections of claims 37-48 and 61-68 have been fully considered and are persuasive. 35 USC 112 rejections to the claims have been withdrawn.

Applicant's arguments see pages 19-24 of the Remarks section, filed 5/25/2007, with respect to the rejections of claims have been fully considered and are not persuasive.

Claims 37-41:

Applicant in page 19 last paragraph to page 21 last paragraph summarizes what Felix and Das teach and what the office action states. In page 22 first paragraph, Applicant argues that *no combination of the references can teach or suggest that a data packet missing from the first channel can be retransmitted on a second channel at a higher rate*. However, Examiner respectfully disagrees with the assertion. Felix and Das

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indeed teach the cited limitations. Specifically, Felix teaches sending at least one replacement data packet to mobile station on second channel at a second data rate (While the interruption or timeout occurs, retransmission would utilize the fundamental channel, which would be considered as second channel at a second data rate. See col 4, lines 1-50.). Das teaches transmitting data to a receiver at a first rate (lower rate); determining a new rate for the retransmission of the data based on the received channel information; and retransmitting the data to the receiver. The data that is retransmitted is at a higher rate than the data that is transmitted (page 5 lines 1-14).

Applicant further argues (page 22 second paragraph) *for the combination the Examiner suggests to be operable, it would not be sufficient simply to take the "resend at a higher rate" teaching from Das; one would have to take Das's entire teaching regarding the "channel rate indicator" in order for the adaptive transmission to operate as Das teaches. In such a case, one of skill in the art would not use this combination system to retransmit on a second channel, but would rather do just as Das teaches - retransmit on the first channel in accordance with the "channel rate indicator". Das certainly does not teach or suggest that the channel quality of a "low-speed fundamental Channel" should be measured and that the rate of the fundamental channel should be adapted, and So thereis no teaching or suggestion of the claimed retransmission, on a second channel, at a higher rate than the first channel.* However, Examiner respectfully disagrees with the Applicant's assertion. The teaching of transmitting in first channel is taught by Felix (sending the data from base station at a first data rate on the first bandwidth as the supplemental channel. See col 4, lines 1-30). The teaching of

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resending at least one replacement data packet to mobile station on second channel at a second data rate is taught by Felix (While the interruption or timeout occurs, retransmission would utilize the fundamental channel, which would be considered as second channel at a second data rate. See col 4, lines 1-50). Das teaches retransmitting the data to the receiver at a higher rate than the data that is transmitted (page 5 lines 1-14). As such Felix in combination with Das do indeed teach the claimed retransmission, on a second channel, at a higher rate than the first channel.

Claims 42, 46-48, 54 and 58-68 :

Applicant argues (page 23 paragraph 2) *each of the claims requires a transmission on a second channel at a rate higher than the original transmission on the first channel (as discussed in detail above). This feature is not taught or suggested by any combination of Das and Kubota, alone or in combination with Coverdale and/or Kubota.* However, Examiner respectfully disagrees with the assertion for the reasons cited above.

Applicant further argues that (page 23 paragraph 3) *the error in the rejection appears to be a misreading of Das by the Examiner. The Examiner indicates that Das teaches retransmission on a second Channel. Das has no teaching or suggestion of this, nor any teaching or suggestion that Das's base station is capable of this. Das only discusses "the channel" in the Singular form when discussing different data rates.* However, Examiner respectfully submits that the retransmission on a second channel is taught by Felix. Das teaches retransmission at higher rate.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Conclusion


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Salman Ahmed whose telephone number is (571) 272-8307. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA
Salman Ahmed
Patent Examiner
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